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09/848,794	05/04/2001	Adrian Boariu	042933/302745	7888

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EXAMINER	
PUENTE, EVA YI	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/848,794	BOARIU, ADRIAN	
	Examiner	**Art Unit**	
	EVA Y. PUENTE	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5.11-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,11-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6/19/08 have been fully considered but they are not persuasive.

Applicant's argument – (1) Prior art Hammons, JR. et al does not teach "a decoder for directly combining…." required in the claim. (2) Hammons, JR. et al does not teach decoding based upon a real-valued vector. The office action ignores the fact that in the case of BPSK the received signal still has complex component.

Examiner's response – (1) It appears that applicant argues that Hammons, JR. et al teaches away from the instant application and is an nonanalogous art. Examiner disagrees. Hammons explicitly discloses a wireless communication system (Fig. 2), wherein comprises a space-time encoder (58) in the transmitter device, and a space-time decoder (80) in the receiver device. Although Hammons maybe is concerned about different design issues than the instant application (as pointed out by applicant), it does not necessary mean that Hammons failed to anticipate the claimed limitation. *The question of whether a reference is analogous art is not relevant to whether that reference anticipates. A reference may be directed to an entirely different problem than the one addressed by the inventor, or may be from an entirely different field of endeavor than that of the claimed invention, yet the reference is still anticipatory if it explicitly or inherently discloses every limitation recited in the claims. A reference is no less anticipatory if, after disclosing the invention, the reference then disparages it. The question whether a r*eference "teaches away" from the invention is inapplicable to an

anticipation analysis (See MPEP §2131.05). (2) Applicant's argument over that in the case of BPSK the received signal still has complex component is weak and non supportive. Hammons clearly disclose both space-time BPSK and QPSK codes ([0038]). It is well known that BPSK has constellation real values of +1 and -1. BPSK has two phases which are 180 degrees apart. Hammons further explicitly define the BPSK complex number ω is equal to -1, which is a real number ([0066 and 0068]). Thus, BPSK does not have complex values. Therefore, Hammons's meet the claimed limitations and Applicant's arguments are not persuasive.

Claim Objections

2. Claim 1 is objected to because of the following informalities: on line 11, please change "said detector" to -- said decoder --; please add -- of symbols -- after "values".

3. Claim 11 is objected to because of the following informalities: on line 11, please add -- of symbols -- after "values".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-5 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammons, JR. et al (Pub. No.: US 2004/0146014).

a) Regarding to claim 1, Hammons disclose apparatus for a communication system in which space-time encoded data (58 in Fig. 2) is transmitted at a first location (70a in Fig. 2) and at least at a second location (70b in Fig. 2) for communication to a receive station (72 in Fig. 2), said receive station for decoding the space-time encoded data received thereat, said an apparatus comprising:

a decoder (80 in Fig. 2) coupled to receive indications of received values of the space-time encoded data received at the receive station, said decoder for directly combining values of the space-time encoded data transmitted from different ones of the first and at least second locations to the receive station (a single antenna at receiver in Fig. 2), the received values of the space-time encoded data, once directly combined, forming a real-valued vector, free of imaginary component parts (Equations 1 and 2 inherently comprises real-value vector, which is inherently free of imaginary component parts). Hammons does not specify the decoder for detecting values of symbols of which the space-time encoded data is formed, based upon a function of real-valued vector, devoid of any complex matrices.

However, Hammons disclose both space-time BPSK and QPSK codes ([0038]). It is well known that BPSK has constellation real values of +1 and -1. BPSK has two phases which are 180 degrees apart. Hammons further explicitly define the BPSK complex number ω is equal to -1, which is a real number ([0066 and 0068]). Thus, BPSK does not have complex values. Therefore, it is obvious to one of ordinary skill in

art to recognize in Hammons' system the detection values of symbols is based upon real-valued vector and devoid of any complex matrices when the received symbols are BPSK symbols.

b) Regarding to claim 11, Hammons disclose a method for communicating in a communication system in which space-time encoded data (58 in Fig. 2) is transmitted at a first location (70a in Fig. 2) and at least a second location (70b in Fig. 2) for communication to a receive station (72 in Fig. 2), said method for decoding the space-time encoded data, once received at the receive station, said method comprising:

directly combining received values of the space-time encoded data transmitted from different ones of the first and at least second location to the receive station (a single antenna at receiver in Fig. 2), the received values of the space-time encoded data, once directly combined, forming a real-valued vector, free of imaginary component parts (Equations 1 and 2 inherently comprises real-value vector, which is inherently free of imaginary component parts) [0012-0015]). Hammons does not specify the decoder for detecting values of symbols of which the space-time encoded data is formed, based upon a function of real-valued vector, devoid of any complex matrices.

However, Hammons disclose both space-time BPSK and QPSK codes ([0038]). It is well known that BPSK has constellation real values of +1 and -1. BPSK has two phases which are 180 degrees apart. Hammons further explicitly define the BPSK complex number ω is equal to -1, which is a real number ([0066 and 0068]). Thus, BPSK does not have complex values. Therefore, it is obvious to one of ordinary skill in art to recognize in Hammons' system the detection values of symbols is based upon

real-valued vector and devoid of any complex matrices when the received symbols are BPSK symbols.

c) Regarding to claim 2, Hammons disclose the apparatus of claim 1, wherein the space-time encoded data transmitted at the first and at least second locations comprise a space-time encoded block of data (as shown in Fig. 4), and wherein said decoder directly combines received values of the space-time encoded block (as shown in Fig. 2).

d) Regarding to claim 3, Hammons disclose the apparatus of claim 2 wherein said decoder further forms a sequence estimate, the sequence estimate formed of a sequence of values of the symbols ([0005-0022]).

e) Regarding to claims 4 and 14, Hammons disclose wherein the communication system comprises a radio communication system (inherent as DS-CDMA; [0041]), wherein the first location at which the space-time encoded data is transmitted comprises a first antenna transducer (70a in Fig. 2), wherein the second location at which the space-time encoded data is transmitted comprises a second antenna transducer (70b in Fig. 2), the second antenna transducer spaced apart from the first antenna transducer (as shown in Fig. 2), wherein the receive station comprises a radio receiver (72 in Fig. 2), and wherein said decoder is coupled to receive indications of the space-time encoded data received at the radio receiver (80 in Fig. 2).

f) Regarding to claims 5 and 15, Hammons disclose wherein the space-time encoded data transmitted at the first antenna transducer is transmitted upon a first communication path to the receive station (Ant1 in Fig. 2), wherein the space-time encoded data transmitted at the second antenna transducer is transmitted upon a

second communication path to the receive station (Ant2 in Fig. 2), wherein the receive station comprises at least one receive-antenna transducer (72 in Fig. 2) coupled to transducer indications of the space-time encoded data transmitted upon the first and second communication paths, respectively, into electrical form, and wherein the indications of the received values of the space-time encoded data to which said decoder is coupled to receive are in electrical form, subsequent to reception at the receive antenna transducer (as shown in Fig. 2).

g) Regarding to claim 12, Hammons disclose the method of claim 11 wherein the space-time encoded data transmitted at the first and at least second locations comprises a space-time encoded block of data (as shown in Fig. 4) and wherein said operation of directly combining received values of the space-time encoded data comprises directly combining values of the space-time encoded block (a single antenna at receiver in Fig. 2).

h) Regarding to claim 13, Hammons disclose the method of claim 12 further comprising the an operation of forming a sequence estimate, the sequence estimate formed of a sequence of values of the symbols detected during said operation of detecting values of symbols of which the space-time encoded data is formed (Fig. 2 and 4; [0005-0022]).

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Puente whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Puente
Examiner
Art Unit 2611

October 9, 2008

/Chieh M Fan/

Supervisory Patent Examiner, Art Unit 2611